

Dirk Mensing  
M60086PCT

**Claims**

5

1. A method for bidirectional transmission of electronic data in a television data cable network having segments which each comprise two or more user interfaces, with each of the segments being connected via a cable connection to a feed point for the television data cable network, and with the method comprising the following steps:

10

a) downlink transmission of electronic data from the feed point to at least some of the user interfaces of one or of all of the segments via the cable connection, in which

15

- requested electronic data is fed into the cable connection as digital downlink data via the feed point and is transmitted from the feed point to a processing device which is connected downstream from the feed point in the cable connection, of a first type;

20

- from the digital downlink data in the processing device of the first type, local electronic data is produced for distribution to at least one user interface in a local segment which is coupled to the processing device of the first type, and electronic downlink remote data is produced for transmission in a downlink radio-frequency band in an upper cut-off area of a transmission bandwidth of the cable connection;

25

- the local electronic data is transmitted in a downlink frequency band within the transmission bandwidth of the cable connection, which is formed below the downlink radio-frequency band;

30

- the electronic downlink remote data is fed into the downlink radio-frequency band of the cable connection by means of the processing device of the first type, and is transmitted via the cable connection to a further processing device of the first type; and

35

- the electronic downlink remote data is converted in the further processing device of the first type to further

local electronic data for distribution to at least one user interface in a further local segment which is coupled to the further processing device of the first type;

5       b) uplink transmission of electronic data from at least one of the user interfaces of one or all of the segments to the feed point via the cable connection, in which

- electronically recorded user data is fed into the cable connection via the at least one user interface;

10       - electronic uplink remote data is produced from the electronically recorded user data in the further processing device of the first type, which is connected upstream of the at least one user interface in the cable connection;

15       - the electronic uplink remote data is fed into an uplink radio-frequency band in the upper cut-off area of the transmission bandwidth of the cable connection by means of the further processing device of the first type, and is transmitted via the cable connection to the processing device of the first type; and

20       - the electronic uplink remote data is converted in the processing device of the first type to digital uplink data, and is transmitted via the cable connection to the feed point.

25       2.    The method as claimed in claim 1, characterized in that the downlink radio-frequency band and the uplink radio-frequency band are adjacent frequency bands.

30       3.    The method as claimed in claim 1 or 2, characterized in that the upper cut-off frequency of the transmission bandwidth of the cable connection is used as the upper cut-off frequency for the uplink radio-frequency band.

35       4.    The method as claimed in one of the preceding claims, characterized in that the downlink radio-frequency band and the uplink radio-frequency band are formed above a frequency of about 470 MHz.

5. The method as claimed in one of the preceding claims, characterized in that the local electronic data is transmitted to the at least one user interface in the local segment, and the further local electronic data is transmitted to the at least one user interface in the further local segment in accordance with a DOCSIS Standard (DOCSIS - "Data Over Cable Service Interface Specification"), the IEEE 802.3 or the IEEE 802.11.
6. The method as claimed in one of the preceding claims, characterized in that a cable modem or an adaptor device is in each case used in the user interface.
7. The method as claimed in one of the preceding claims, characterized in that the electronic downlink remote data is amplified during the transmission in the downlink radio-frequency band of the cable connection between the processing device of the first type and the further processing device of the first type, and/or the electronic uplink remote data is amplified during the transmission in the uplink radio-frequency band of the cable connection between the further processing device of the first type and the processing device of the first type, by means of a processing device of a second type, which is connected between the processing device of the first type and the further processing device of the first type, with the processing device of the second type also transmitting the local electronic data and/or the further electronic data in the downlink and uplink directions.
8. An apparatus for use for a method for bidirectional transmission of electronic data in a television data cable network having segments which each comprise two or more user interfaces, with each of the segments being connected via a cable connection to a feed point for the television data cable network, having:
- b1) a processing module for processing digital uplink data having:

- output means for outputting digital downlink data from the cable connection, which is fed into the cable connection via a feed point;
  - receiving means for reception of the output, digital downlink data from the output means;
  - demodulation means, which are connected downstream from the receiving means, for demodulation of the output, digital downlink data;
  - a central control device, which has production means for production of electronic downlink remote data from the demodulator, output, digital downlink data for transmission in a downlink radio-frequency band in an upper cut-off area of a transmission bandwidth of the cable connection;
  - modulation means for modulation of the electronic downlink remote data for the downlink radio-frequency band; and
  - input means for inputting the modulated electronic downlink remote data into the downlink radio-frequency band of the cable connection; and
- b2) a further processing module for processing electronically recorded user data, having:
- further output means for outputting electronically recorded user data from the cable connection, which is fed via at least one user interface into the cable connection;
  - further receiving means for reception of the output, electronically recorded user data from the further output means;
  - further demodulation means, which are connected downstream from the further receiving means, for demodulation of the output and the received electronically recorded user data;
  - further production means, which are formed by the central control device, for production of electronic uplink remote data from the demodulated, output, electronically recorded user data for transmission in an uplink radio-frequency band in the upper cut-off area of the

transmission bandwidth of the cable connection;

- further modulation means for modulation of the electronic uplink remote data for the uplink radio-frequency band; and

5       - further input means for inputting the modulated electronic uplink remote data into the uplink radio-frequency band for the cable connection.

10       9.    The apparatus as claimed in claim 8, characterized by an interface device which is coupled to the central control device for transmission of local electronic data, which is produced with the aid of the central control device, in a downlink frequency band of the transmission bandwidth of the cable connection, which is formed below the downlink radio-frequency band.  
15

20       10.   The apparatus as claimed in claim 8 or 9, characterized by a radio interface device, which is coupled to the central control device, for transmission of local electronic data, which is produced with the aid of the central control device, via a radio link.

25       11.   The apparatus as claimed in one of claims 8 to 10, characterized by amplification means for amplification of the electronic downlink remote data for the downlink radio-frequency band, and/or of the electronic uplink remote data for the uplink radio-frequency band.